

# Fire Test Comparisons

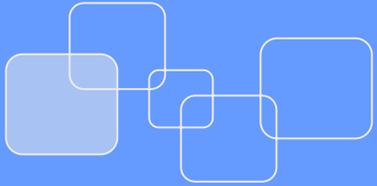
Ionization v. Photoelectric Detectors

Presented by:  
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Business Development Manager

# Agenda

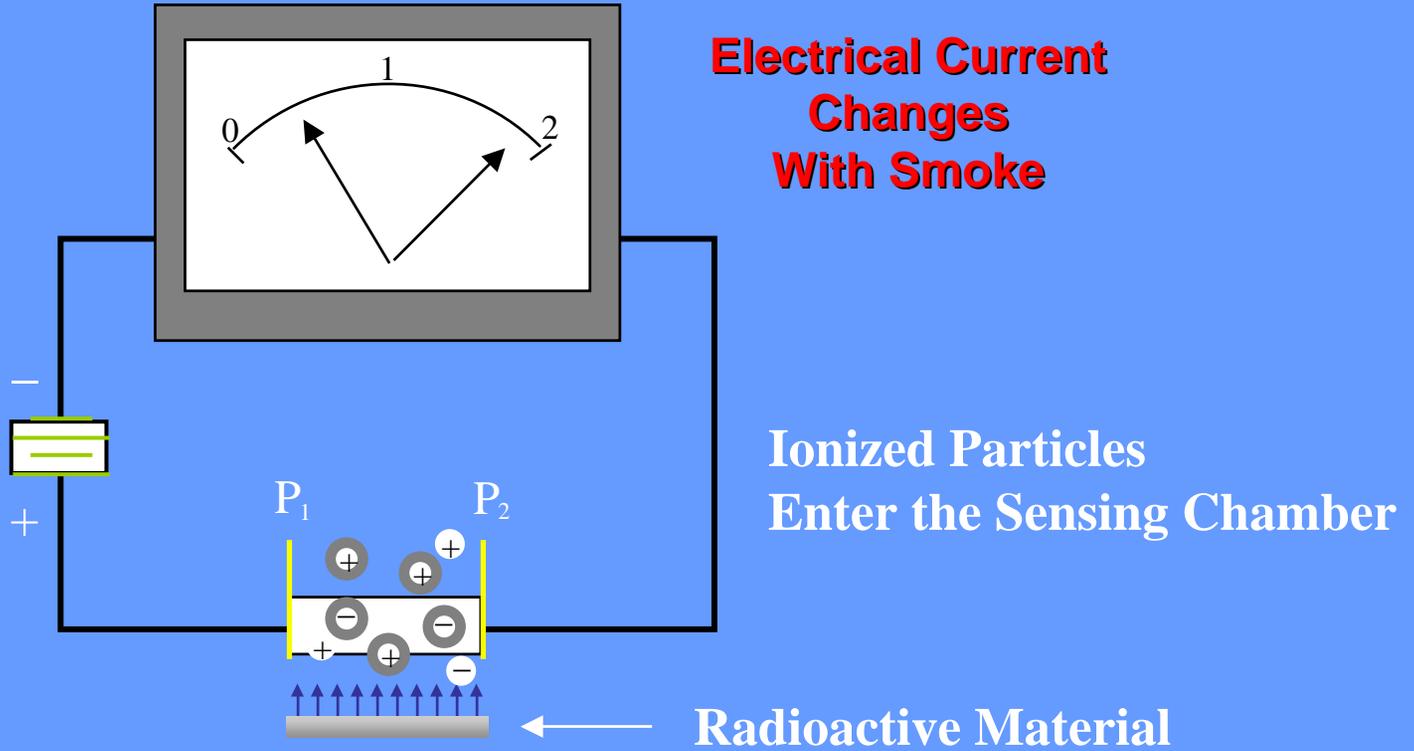
- Technology Review
- Test Procedures
  - UL 268 Smoldering Fire
  - UL 268 Flaming Fire
  - TF5 Flaming Heptane
- Results



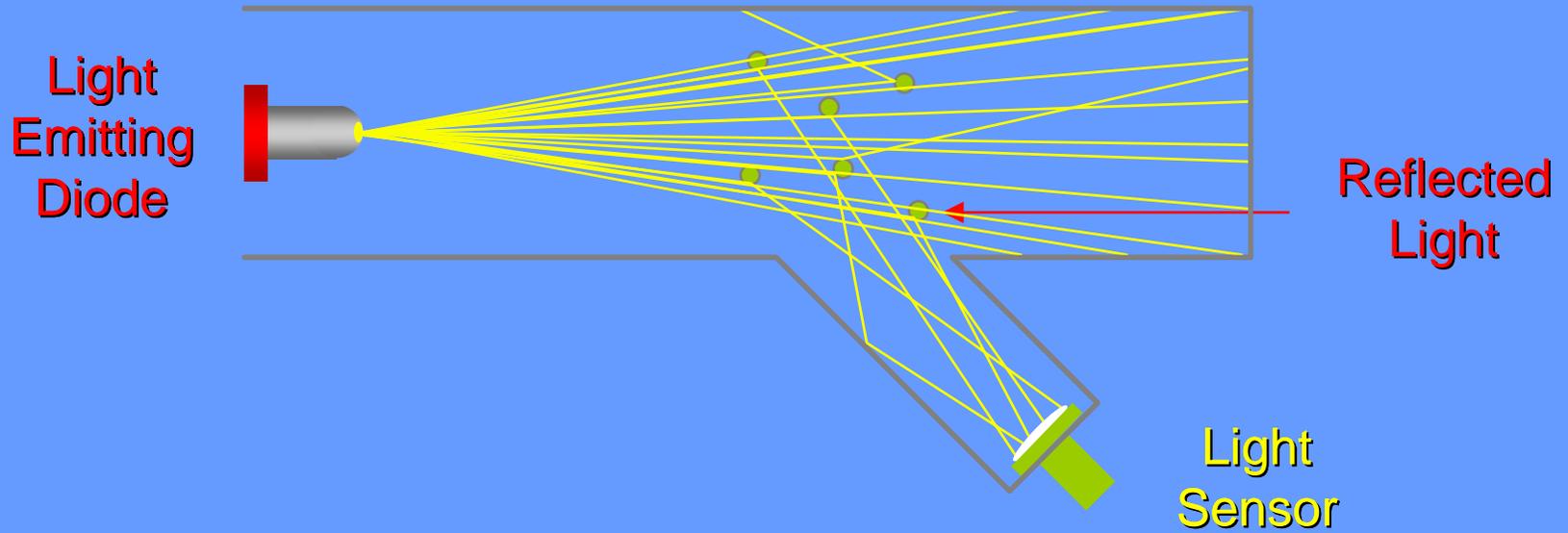


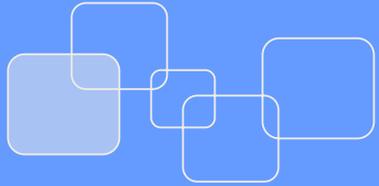
# Detection Technology

# Ionization Smoke Detection



# Photoelectric Smoke Detector





# Comparative Tests

# Objective

Compare response-time characteristics.

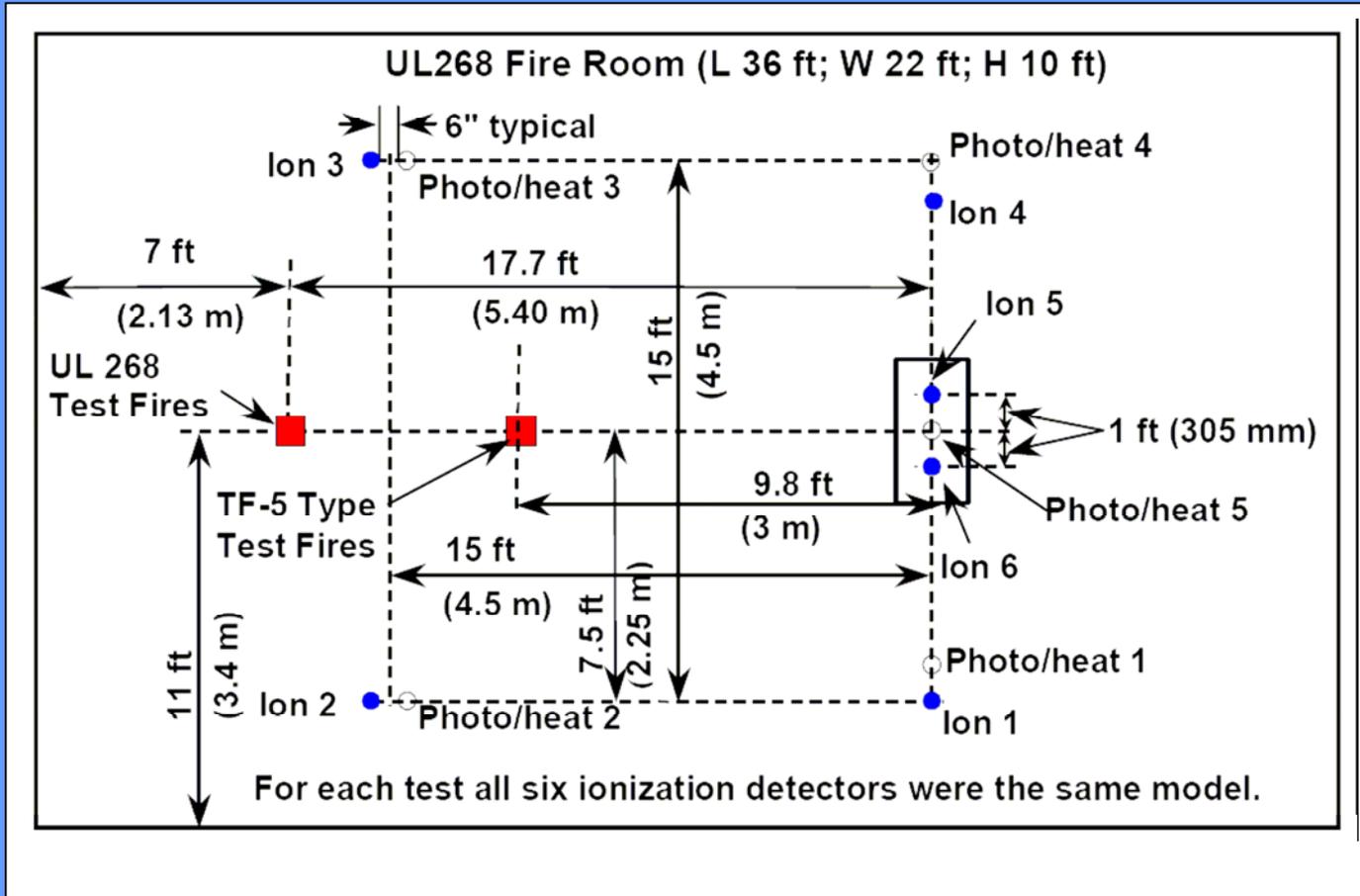
# Testing

- Conducted by Simplex Time Recorder Co. / Tyco Electronic Product Group – Westminster, MA (2001)
- UL 268 Fire Test Room

# Devices

- Commercial detectors
  - Typical Photoelectric
  - Three different Ionization
- Representative of current technology
- Comparison tests
  - High sensitivity
  - Default sensitivity

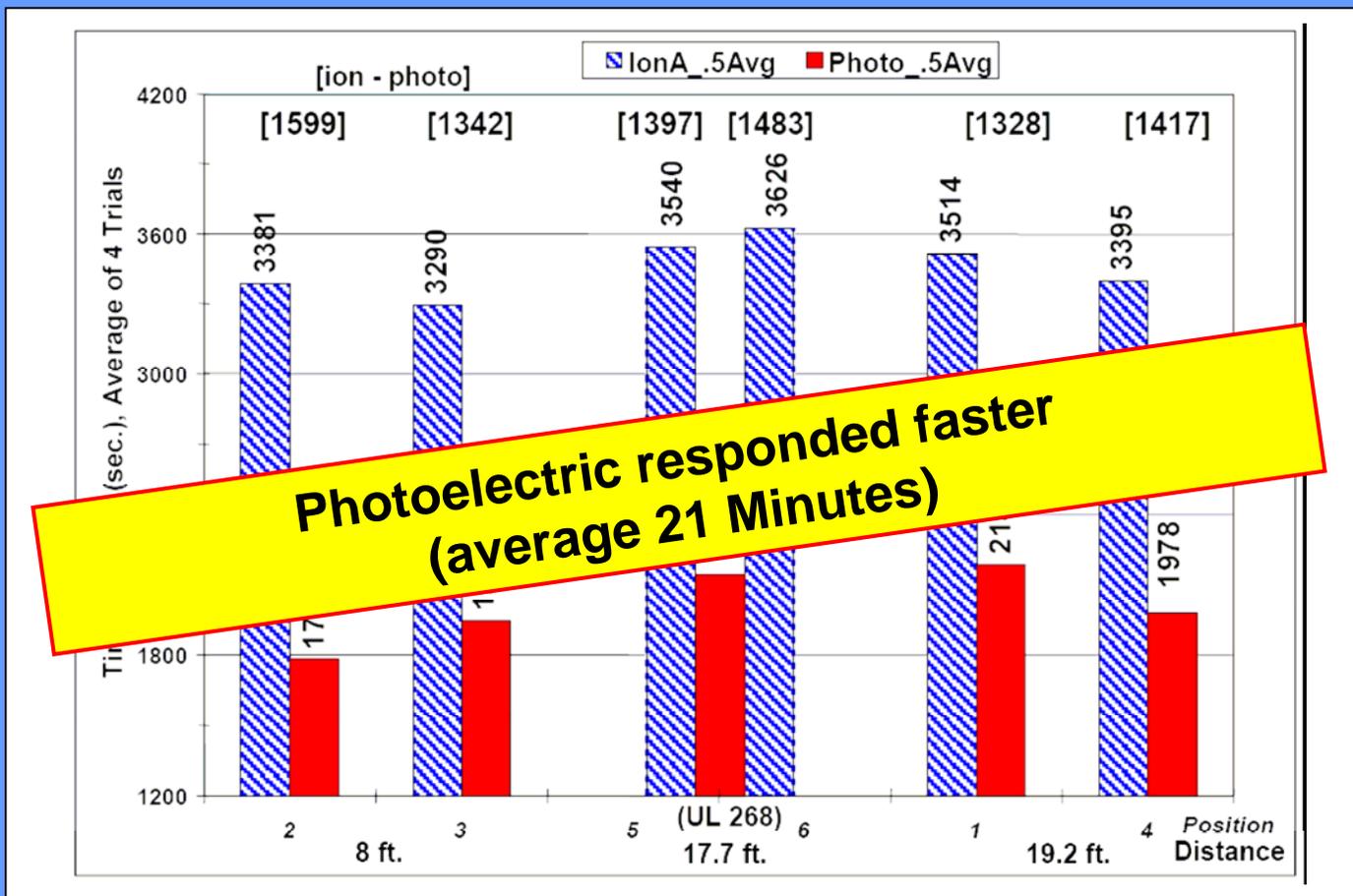
# Test Chamber



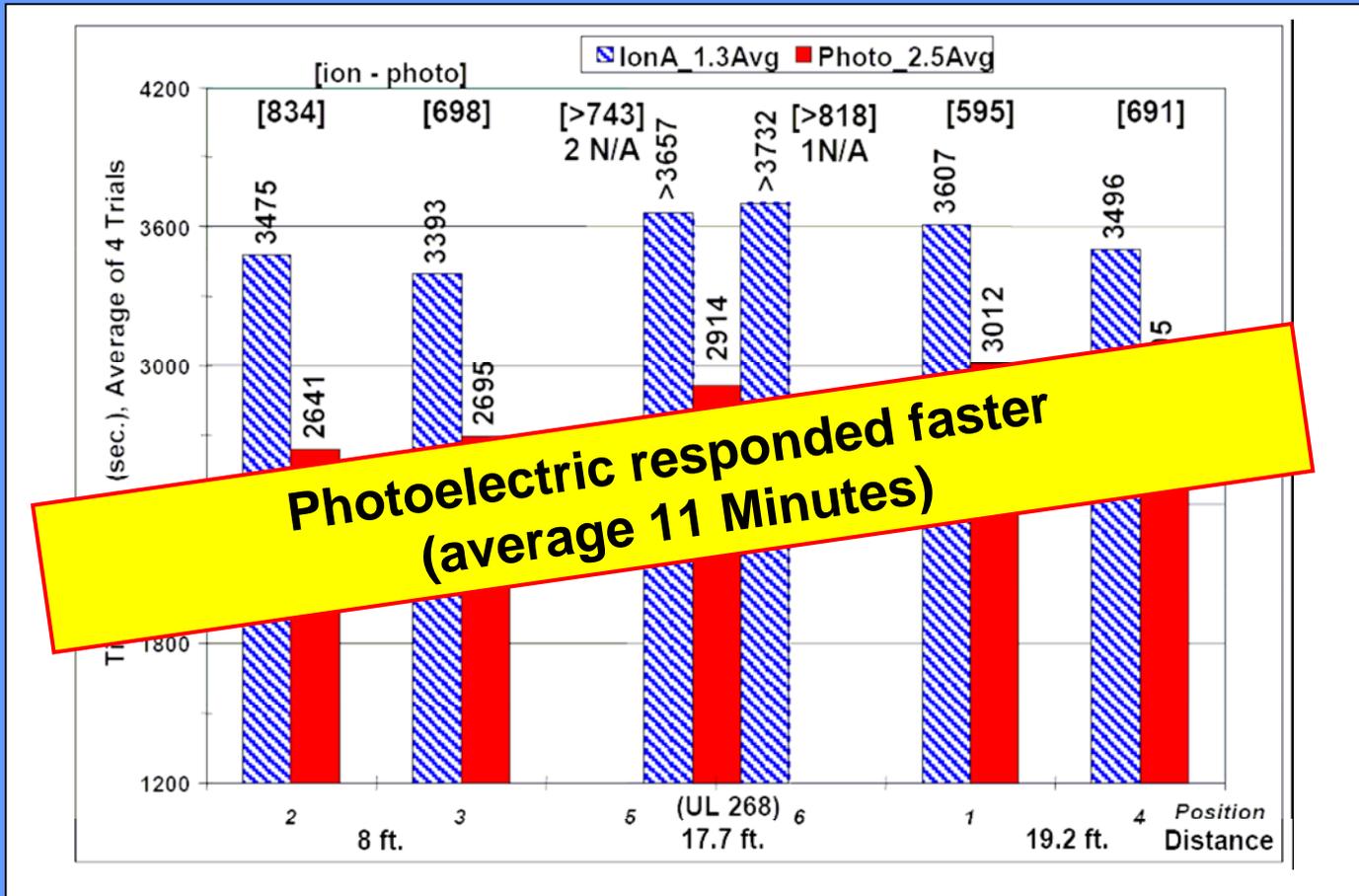
# Smoldering Test

A photograph showing a wooden structure, likely a teepee, with a large plume of white smoke rising from its top. The smoke is thick and fills the upper portion of the frame. The structure is made of light-colored wood and is positioned on the right side of the image. The background is a plain, light-colored wall.

# Smoldering Fire - High Sensitivity



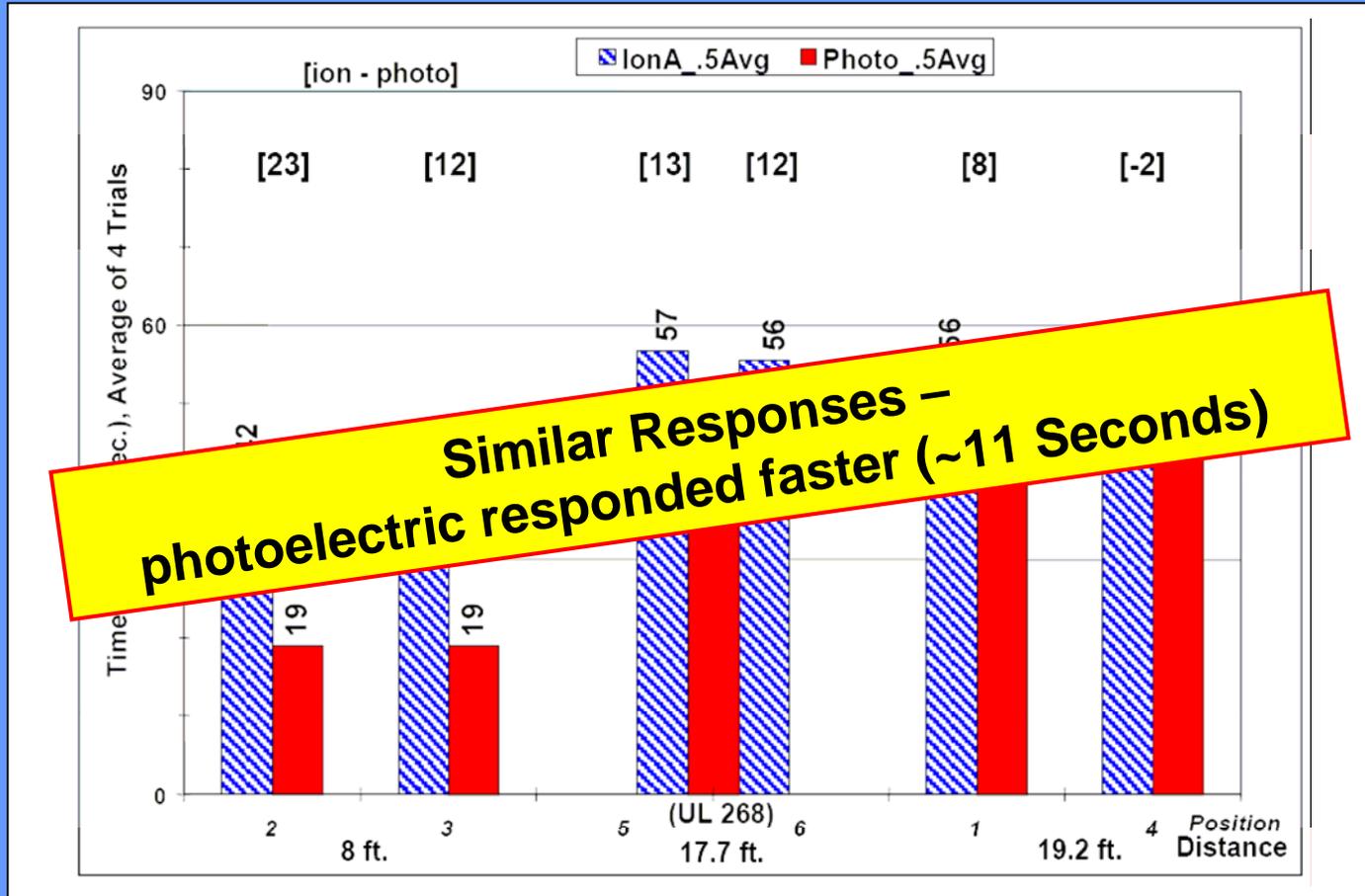
# Smoldering Fire - Normal Sensitivity



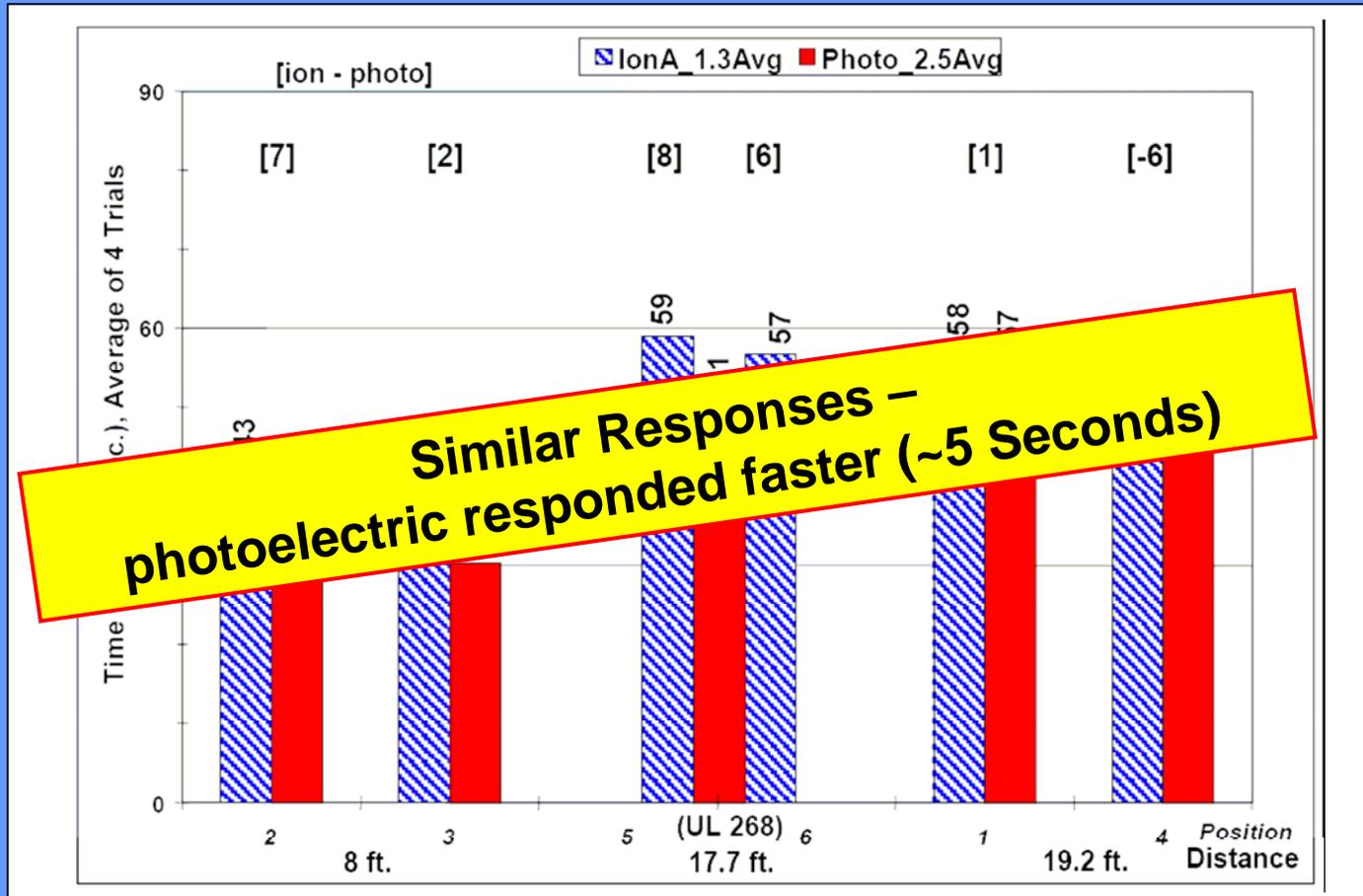
A large, intense fire with bright orange and yellow flames against a dark background. The fire is the central focus, with a dense, turbulent structure of flames. The colors range from deep orange to bright yellow, indicating high temperatures. The background is dark, making the fire stand out prominently.

# Flaming Test

# Flaming Fire - High Sensitivity



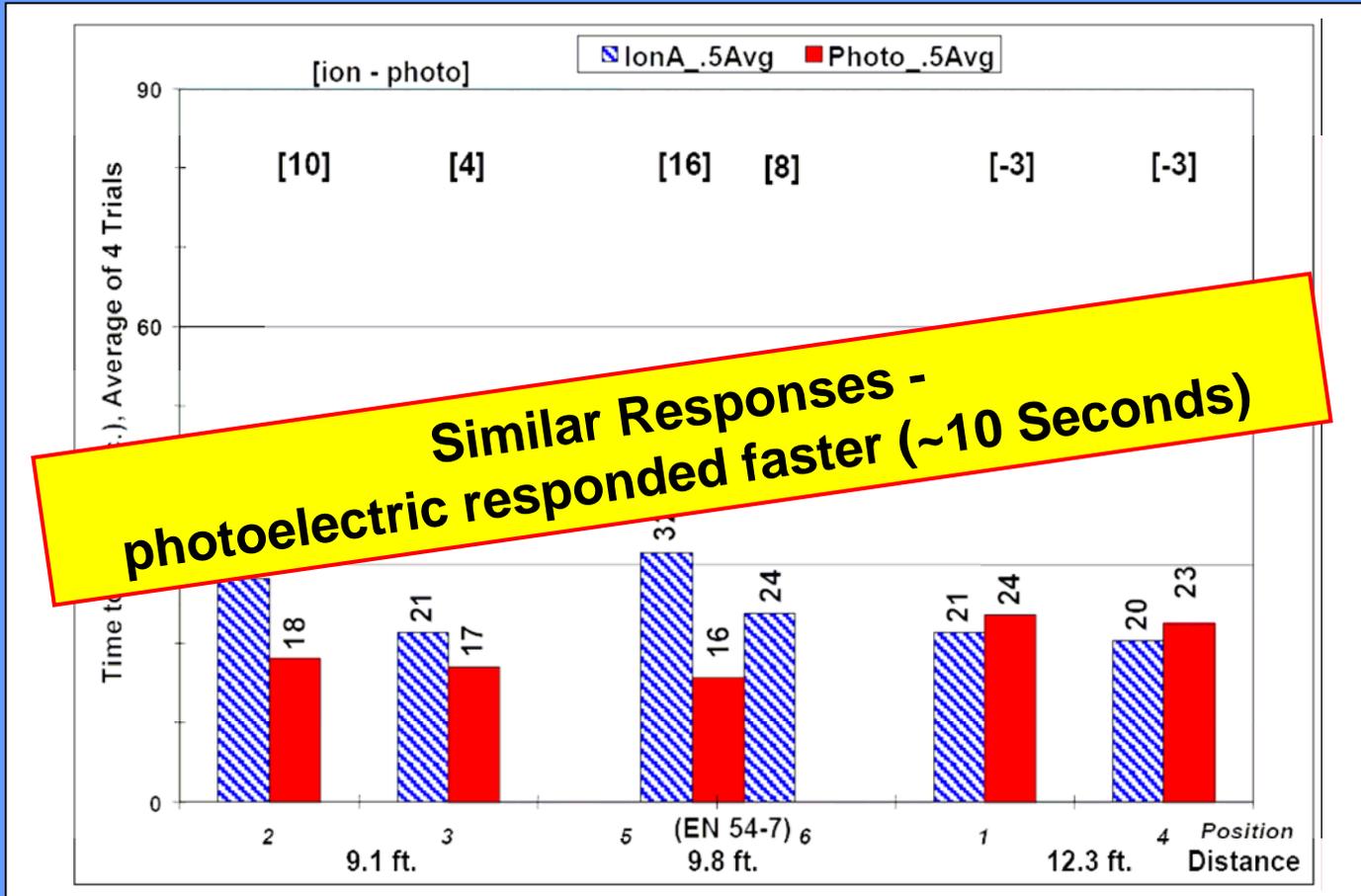
# Flaming Fire - Normal Sensitivity



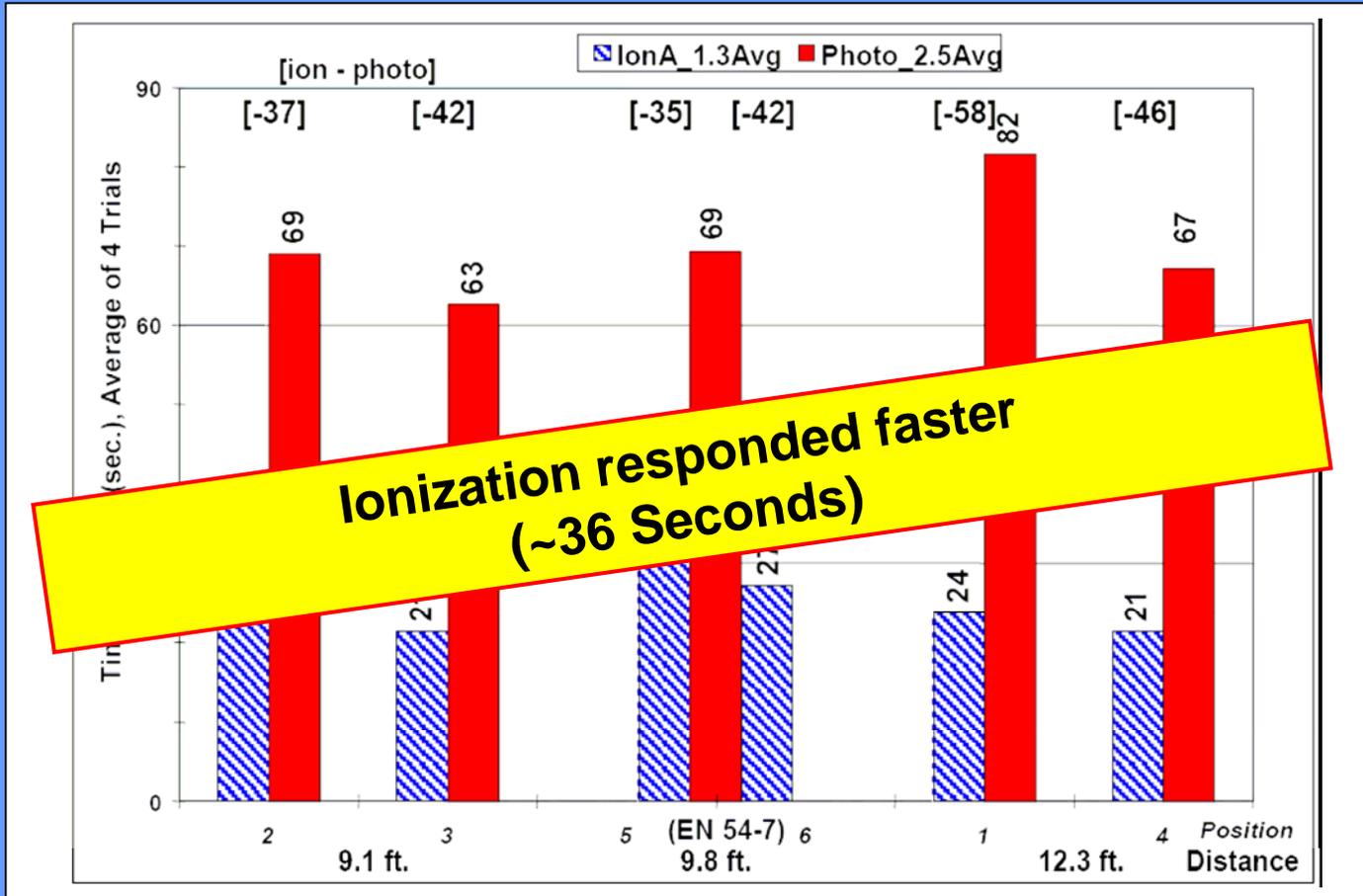


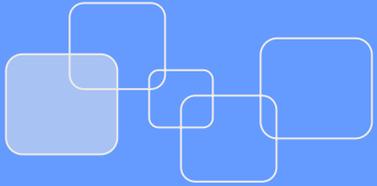
TF 5 Flaming Heptane

# TF5 Heptane - High Sensitivity



# TF5 Heptane - Normal Sensitivity





# Summary

# Smoldering Test



Photoelectric detectors  
responded significantly faster

# Flaming Test



Detector responses were similar.

# TF5 Heptane Results



Ionization and Photoelectric responses were similar.

At 'normal' sensitivity, Ionization responded 36 seconds faster.

# Reference

- J. R. Qualey III, L. Desmarais, J. Pratt  
Simplex Time Recorder Co.

*Response-Time Comparisons of Ionization and Photoelectric/Heat Detectors (revised 3/28/01).*